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Cuellar, Kelly Paola Sierra; Ortiz, Lina Yasmín Ramírez; Delgado, Mónica Danelly Florez; Ordóñez, Juan Carlos Acosta; Perdomo, Claudia Andrea Ramírez

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Federal University of Rio de Janeiro State

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## RESEARCH

### Fatores que influenciam na resposta à terapia de pressão negativa (TPN) nas feridas de pacientes do Hospital Universitario de Neiva

Factors which influence the response to the negative pressure therapy (NPT) in wounds of patients of the Neiva University Hospital

Factores que influyen en respuesta a terapia de presion negativa (TPN) en heridas de pacientes del Hospital Universitario de Neiva

Kelly Paola Sierra Cuellar <sup>1</sup>, Lina Yasmín Ramírez Ortiz <sup>2</sup>, Mónica Danelly Florez Delgado <sup>3</sup>, Juan Carlos Acosta Ordóñez <sup>4</sup>, Claudia Andrea Ramírez Perdomo <sup>5</sup>

#### ABSTRACT

**Objective:** identifying the factors which influence the response to the negative pressure therapy for wounds. **Method:** there were carried out between March and May 2013 a prospective longitudinal study at the University Hospital of Neiva with a sample of 9 patients, non-probabilistic by convenience. **Results:** there was clear predominance of males (88,9%) aged < 41 years old or less (77,7%). Before the treatment the patients manifested via numerical scale a pain level between 5 and 6 (44,4%), weight loss (88,9%), the average duration of treatment was 4.4 weeks, reduced wound size (88,9 %), social isolation during hospitalization (88,8%), reuse of canisters during refills (88,9%). **Conclusions:** nursing care for patients with wounds difficult to manage with a negative pressure therapy should be holistic; to generating a healthy environment by solving problems integrating the biopsychosocial needs affected and to minimizing the level of dependence. **Descriptors:** Nursing, Wounds and Injuries, Factorial Analysis, Negative pressure wound therapy, Determination of health care needs.

#### RESUMO

**Objetivo:** identificar os fatores que influenciam na resposta a terapia de pressão negativa nas feridas. **Método:** foi realizado entre março - maio 2013 um estudo longitudinal prospectivo no HUHMP de Neiva, com mostra de 9 pacientes, não probabilística por conveniência. **Resultados:** predomínio do gênero masculino (88,9%) e idade <41 anos (77,7%). Expressaram nível de dor pela escala numérica, antes do tratamento, de intensidade entre 5 e 6 (44,45), diminuição de peso (88,9%), duração média da terapia de 4.4 semanas, diminuição do tamanho da ferida (88,9%), isolamento social durante a hospitalização (88,8%), reutilização do canister durante recâmbios (88,9%). **Conclusões:** a atenção de enfermagem ao paciente com feridas do difícil tratamento com Terapia de Pressão Negativa deve ser holística, que gere um ambiente saudável mediante a resolução de problemas integrando as necessidades biopsicossociais afetadas e diminui o nível de dependência. **Descritores:** Enfermagem, Ferimentos e lesões Análise fatorial, Tratamento de ferimentos com pressão negativa, Determinação de necessidades de cuidados de saúde.

#### RESUMEN

**Objetivo:** identificar los factores que influyen en la respuesta a la TPN en heridas. **Método:** se realizó entre Marzo-Mayo 2013 un estudio longitudinal prospectivo en el HUHMP de Neiva, con muestra de 9 pacientes, no probabilística por conveniencia. **Resultados:** predominio del sexo masculino (88,9%) y edad <41 años (77,7%). Manifestaron nivel de dolor mediante escala numérica, antes del tratamiento de intensidad entre 5 y 6 (44,4%), disminución de peso (88,9%), duración de terapia en promedio de 4.4 semanas, disminución tamaño de herida (88,9%), aislamiento social durante hospitalización (88,8%), reutilización de canister durante recambios (88,9%). **Conclusión:** la atención de Enfermería al paciente con heridas de difícil manejo con TPN, debe ser holística, que genere un ambiente saludable mediante la resolución de problemas al integrar las necesidades biopsicosociales afectadas y minimice el nivel de dependencia. **Descriptor:** Enfermería, Heridas y traumatismos, Análisis factorial, Terapia de presión negativa para heridas, Evaluación de necesidades.

1 Graduating in Nursing at the University Surcolombiana of Neiva. Email: pao\_sierra98@hotmail.com 2 Graduating in Nursing at the University Surcolombiana of Neiva. Email: lyro\_622@hotmail.com 3 Graduating in Nursing at the University Surcolombiana of Neiva. Email: dane.689@hotmail.com 4 Graduating in Nursing at the University Surcolombiana of Neiva. Email: juanchojafa61@hotmail.com 5 Nurse, Intensive Care Specialist. Master of Nursing Administration and Health and Nursing Services, Lecturer in Research / USCO. Email: clauram1@hotmail.com

## INTRODUCTION

**T**he complexity of the healing process began to further elucidating the past decade, since facilitated the change of attitude to this lack of evidence, due to advances in immunocytochemistry and molecular biology, a fuller understanding of the cascade of cellular events, metabolic and humoral that occur at different stages of tissue repair.<sup>1</sup>

This has been of vital importance for the development of the new conception of the ideal cure for health professionals who are facing the unwieldy wounds.<sup>2</sup>

Thus, advanced healing has become, so far, the most appropriate way of dealing with a chronic local viewpoint wound.

The treatment of topical negative pressure applied in mechanical devices are used to facilitate the closing of long or deep wounds and is considered one of the greatest advances in the management of wounds.<sup>3</sup> Features of this therapy is its extensive use since it handles the diversity of chronic wounds.

It is also interesting to note its main purpose as a promoter of wound healing, which are: debridement of viable tissue, control and removal of foreign agents and obtain homeostasis.<sup>4</sup>

Therefore, this study aims to: identify the factors that influence the response to the negative pressure therapy in the wounds of patients treated at the University Hospital Hernando Moncaleano Perdomo, the city of Neiva. Correlate the physiological, psychological and environmental factors that influence the response to the TPN.

## METHOD

It is a prospective longitudinal study in HUHMP of Neiva, between the months of March and May 2013. The population consisted of all patients treated by the clinic with wounds to the NPT, and the sample consisted of 9 patients selected according to the following inclusion criteria: patients hospitalized in HUHMP, over 18 years old undergoing treatment for clinical wound of the institution through the use of TPN and patients who agreed to voluntarily participate in the research study through the diligence of informed consent, which includes

the ethical principles for the development of the study in the Helsinki declaration of the World medical Association that contains the ethical principles for medical research involving human subjects.

Of the 10 patients with the characteristics required for the study, 9 were taken in 90 days. The hospital has medical service of wounds and ostomies, where the TPN is handled. For data collection was made use of four instruments, two questionnaires that assessed the influence physiological and psychological aspects of treatment, which were applied before the treatment (pre-test) and at the end of this (post-test were used), which consisted of 20 questions on the type and 24 items, respectively dichotomous Likert5 and multiple choice.

Presented each statement and asked that it chose one of the five points each, a numeric value is assigned, then it got a score with respect to the claim and finally got your total score by adding the results obtained in the scale of claim if Likert-type; or not, for dichotomous and one of the options for those who have more than 2 credits, ie, the multiple choice.

We also implemented two checklists that took into account the physiological aspects and the environment, which were applied during the laying and TPN parts with items 19:23, respectively. Observation visits to patients in the hospital were held twice a week for each of the researchers on the days set in the hospital for postures and spare parts (Monday and Thursday). All data were obtained from clinical records of patients; not had access to the area where the surgical procedures were performed since it was not supported by the health team responsible for dealing with the TPN. Frequency measures, reason, proportion, rates and correlation were used for data analysis developed the database using a table in Excel version 2007 and it was analyzed using the statistical package SPSS version 2010, where each patient data were included and study variables.

The project was duly examined and approved by the Ethics Committee of the Hospital by the act of approval No. 016-002 on 17<sup>th</sup> December, 2012.

## RESULTS E DISCUSSION

Table 1- Sociodemographic factors of patients with TPN on wounds (n=9). Neiva, 2013.

Variables			
Age (in years)		N°	%
≤ 41		7	77.7
66		2	22.2
Gender			
Male		8	88.9
Female		1	11.1



<b>Socio-economic stratum</b>		
1	6	66.7
≥ 2	3	33.3
<b>Marital status</b>		
Single	3	33.3
Stable Union	6	66.7
<b>Schooling</b>		
None	2	22.2
Primary	4	44.4
Secondary	1	11.1
Technological	1	11.1
University	1	11.1

The population of patients of Neiva HUHMP submitted to the NPT during the time of data collection and who agreed to participate in the study had the following characteristics: predominance of <41 years (77.7%) and male (88.9%) with prevalence of socio-economic stratum 1 (66.7%). It was found to be, the state, whichever is Free Civil Union in 66.7% of the population and 22.2% and 44.4% reported not having done any level of studies and the primary base level respectively. This is consistent with the trends that will continue to deepen in the future, making wider population pyramid for adultas6 ages and population characteristics served in the institution, most of the welfare system, which is in public.

Initially the study population consisted of 10 patients; however, one must be excluded for exceeding the time of more than 9 weeks of data collection, until he was 8 spare parts, with little success.

Table 2- Physiological factors that influence the response to the TPN on wounds (n=9). Neiva, 2013.

Variables	N°	%
<b>Beginning of pain TPN</b>		
5 - 6 on the pain scale	4	44.4
<5 on the pain scale	5	55.6
<b>Information the presence of infection</b>		
Informed	3	33.3
Did not inform	6	66.7
<b>Special diet</b>		
Not before TPN	7	77.8
Yes, before TPN	2	22.2
Not during TPN	9	100

Yes, during TPN	0	0
Complications		
Bleeding	1	11.1
Pain	6	66.7

Physiological factors related to the wound and according to the evaluation Henderson<sup>7</sup>, the basic safety requirement is affected by the presence of pain, and other Patino GD emphasize that this is an important indicator that must be monitored since an abnormality expressed healing by interfering with the closing of ulcers and wounds due to a decrease in blood flow direction.<sup>8</sup> The level of pain by the patients expressed by numerical scale before treatment with an intensity between 5 and 6 correspond to 44.4% as a result of complications arising from the base of the same injury or disorder, which showed a gradual decrease during the laying related to the treatment and removal of foam and increasing the negative pressure, as shown in his study and other Kestens.<sup>9</sup>

Another requirement was affected learning deficits which have presented the information that 66.7% of the patients do not know the presence or absence of infection in the area of the lesion prior to initiation of treatment with the TPN, front and center, which is the main risk factor in patients with chronic skin lesions.<sup>10</sup> Thus lesions, Yepes D. et al., study the presence or acquisition of information is sufficient to achieve the health goals and confidence improve acceptance of care.<sup>11</sup>

As the need for food to be successful it is essential to wound healing that have been conditioned by the presence or absence of the NPT prior special diets where 77.8% of patients had no nutritional support made like during treatment in all 100% same, which could result in inadequate nutrient intake, followed by a decrease of weight in 88.9% of patients. So eating a balanced diet and maintaining a healthy weight can reduce the risk for developing several chronic diseases that predispose a person to have wounds and promotes healing in who already has them.<sup>12</sup>

Furthermore, the most prevalent complications were pain and bleeding in 66.6% and 11.1%, respectively, under consideration of the study effects Jimenez 13 as minimum and controllable persistence in the TPN. It should be noted that in one patient experienced pain was 10 according to the numerical pain scale, as indicated in the chart, provided that underwent surgery without anesthetic management.

Length of treatment time was on average 4.4 weeks, against the benefits provided by the NPT allowing the care of complex wounds decreasing complications, given that reduces the length of stay and definitely solves the condition under complex reconstructive methods as in study by Ballesteros<sup>14</sup> with a period of 1.8 week treatment.

Unable to assess the extent and depth of the lesions that this information was not recorded in the medical records and/or surgical report, and despite obtaining institutional guarantee for the development of the research did not have the support team responsible for TPN health management; why not procedures posture and parts where you can get this far,

important data to determine the evolution of healing therapy are witnessed; the wounds were measured at the end of treatment, where 88.9% of the study population showed a decrease in wound size according to the benefits provided for TPN, through its mechanism of action described in the study barrier, such as bed preparation for healing ideal wound, removal of excess interstitial fluid (edema), proliferation of granulation tissue, contraction of the edges, maintaining humidity and temperature.<sup>15</sup>

Table 3- Psychological factors influencing the response to the TPN in wounds (n = 9). Neiva, 2013.

Variables	N°	%
<b>Basic necessity affected</b>		
Hygiene / Skin integrity, dress and undress	5	55.6
Communication / Relationship	6	66.7
Social isolation	8	88.9
Needs for monitoring	7	77.8
Knowledge deficit	6	66.7
Favorable expectations	7	77.8

The psychological factors which influence response to TPN based on the evaluation of Henderson and according to the results fall within the following basic requirements: needs health care/skin, dress and undress: a decreased ability to performing or completing the activities of clothing and appearance, in 55.5% of the population for whom TPN hinder perform these activities related to the lack of care that must be taken with the teams so far made.

The basic need for communication/relationship is affected by the perception of the disease state, causing concern about the deterioration in personal and family maintenance in a 66.6%, social isolation lived during the hospital stay in 88.8% of the population, need for continuous monitoring in 77.7% which guarantees an effective family deal; the study for the bar where social poses support provides the individual a sense of stability and motivation to perform self-care practices and interact with the environment to better stress management.<sup>16</sup>

In need of learning was found that 66.7% of the population did not provide you with information on the TPN and its implications, which creates uncertainty in the patient and his family for not knowing how the process that is being presented is clear, thus excluding the obligation to provide employees information on the procedures to accomplish with each patient and seek informed consent. Still 77.7% of the population remains favorable

expectations on the outcome of therapy as an innovative and specialized treatment for rapid and effective healing of wounds unwieldy.

Table 4 - Environmental factors that influence the response to the TPN on wounds (n=9).  
Neiva, 2013.

Variables	N°	%
<b>Aseptic and antiseptis technique</b>		
Fulfilled	9	100
Does not fulfill	0	0
<b>New materials posture</b>		
Fulfilled	9	100
Does not fulfill	0	0
<b>Reuse of materials</b>		
Canister reuse	8	88.9
Suction cups reuse	3	33.3

To determining the environmental factors associated with the technique applied for the use of TPN results involved in the same noted that, according to medical history records 100% of the patients was aseptic and antiseptic protocol chambers and procedure posture and spare parts, protective factor in the recovery of patients, since the bacterial load, minimizes exposure to hospital pathogens and enhances the device's mechanism of action. Nevertheless, the reuse of materials, such as cylinder posture for spare parts in 88.9% of patients, and the suckers in 33.3% of them are a risk factor for acquiring infection prolonged hospitalization and the use of therapy antibiotic.

By correlating the psychological and sociodemographic factors were found a strong relationship and the influence of aspects such as the patients' educational level on the ability to understand the information on performance and therapy mechanisms of action and self-control that the patient can exercise during the recovery process. On the other hand, marital status, which for the results of this study reported the prevalence of a spouse, generated improvement of expectations derived from the emotional bond that is built by the family approach in times of trouble, which has an impact on the face of the disease process.

The psychological factor variables with each receiving the perception of tranquility that generate family support are also correlated strongly influences the perception of favoritism wound healing by TPN, a result that relates to the basic need for communication Henderson/relationships in which one person usually provides the backbone in this case, provides support, comfort, help or insufficient or ineffective stimulus (or there is a danger of this happening), it may be necessary for the patient to manage and master the adaptive tasks related to your situation health.



Likewise, it is essential to consider that generates correlation between depression and the loss of hospitalization prior to therapy favoring deal with the disease at home for religious beliefs, which strongly influence each other is obtained, which can be connected to the ability of people to increase confidence in religious beliefs and/or participate in the rites of a particular religious tradition that generates hope to achieve the expected fitness.

Finally, it is important to emphasize that the NPT is an effective treatment for wounds, as Plikaitis and Molnar<sup>17</sup> reference now used in many areas of health care, but the scientific basis for this practice is not clear and are not developed explicit criteria on the resources to be met by candidates to TPN, so it is essential to consider these factors that generate a significant degree of influence on the development of it to identify the needs of each patient, considering for holistic and effective care.

## CONCLUSION

According to the analysis and discussion of the results found in patients treated with the negative pressure therapy (TPN) at the Hospital University Hernando Moncaleano Perdomo (HUHMP) of Neiva and supports the needs assessment of Virginia Henderson, concluded:

Physiological factors with the greatest influence on the outcome of therapy are: the presence of pain, infection information in the area of the lesion prior to initiation of treatment, special diets before the TPN, decreased weight, complications such as pain and bleeding during stance and spare parts, time to treatment, the absence of extension of the data and reduce the depth of the wound size and wound healing; to intervene under the physical fitness of the patient process that includes the mechanical skills of people and the individual's ability to carry to term actions that affect the forces: physical and mental, as well as knowledge of the key issues on status health itself of the disease, the person and own resources and others.

Also, within the psychological factors, we determined the effects of: changes in dress, personal hygiene, perception of the involvement of the health status on the emotional state, depression and hospitalization by distance from home, need constant monitoring, dealing with the disease, facilitated by religious faith, information about the therapy and favorable expectations on the outcome of treatment; these strongly affect the integrity and I understand the feelings, emotions, states of mind or intellect, as well as social relation, that is, with the environment and with the environment.

Similarly there was a strong presence of environmental factors: the technique applied to the use of therapy in posture and spare parts, aseptic and antiseptic and the use of new materials and sterile for TPN, representing the set of all external conditions and influences that affect the lives and the development of an organism in which 18 healthy individuals are able to control their environment according to Henderson, but during illness may interfere with such ability<sup>19</sup>.

Similarly the correlation between factors determined a strong relationship between the sociodemographic and psychological, such as education, marital status, information on TPN, family support during treatment and self-control; between the variables of the psychological factor as a family companion, perception of tranquility that generates the family monitoring, perceived facilitate wound healing, causing house hospitalization depression and distance and facilitate coping with the disease through religious beliefs. These results indicate that the nursing function with these patients is to meet the difficult individual patients to use injuries in the implementation of activities that contribute to the restoration of his health, activities that do if you had the strength, will or knowledge, helping the patient to become independent as soon as possible.<sup>20</sup>

Finally, it is important noting that the patient nursing care with wounds difficult to manage in the use of the NPT, which requires radical changes in the lifestyle of patients and uncertainty before a desired destination as the possible recovery of injuries without complications, should be holistic, or a healthy environment managing and troubleshooting implement incorporating the needs of the biopsychosocial that can affect and reduce the effects that increase the level of dependency.

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Contact of the corresponding author:  
Claudia Andrea Ramirez Perdomo  
Universidad Surcolombiana (USCO)  
Dirección: Avenida Pastrana Borrero - Carrera 1 - Neiva • Huila •  
Colombia. E-mail: clauram1@hotmail.com